

2001 Annual Report
Regional 1% Water Conservation Program
May 2002

Saving Water Partnership



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SAVE
TODAY?

Saving Water Partnership

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Northshore Utility District
Olympic View Water & Sewer District
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Shoreline Water District
Soos Creek Water & Sewer District
Woodinville Water District

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Saving Water Partnership

2001 Annual Report

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1. OVERVIEW OF 2001

The regional 1% Water Conservation Program (1% Program) sponsored by the Saving Water Partnership (SWP) reached new levels of activity and performance in 2001. For nearly all program components, 2001 efforts represented a major expansion from 1% Program implementation over previous years. New elements such as rebates for toilets and soaker hoses were designed and implemented, while increased promotion of mature programs such as Wash Wise and Water Smart Technology produced unprecedented participation.

The 2001 water shortage and related messages presented a unique opportunity to boost program performance accompanied by the challenge of maintaining emphasis on *long-term* conservation.

Based on consumption analysis, 1% Program efforts helped customers implement conservation behaviors and equipment producing more than two million gallons per day (MGD) in new long-term savings, surpassing 2001 targets by more than 50%. More than 0.8 MGD of these conservation savings were from new rebated fixtures and equipment. The remaining 1.2 MGD were generated by additional conservation equipment installed without rebates and new permanent conservation behaviors. Curtailment efforts also produced an estimated 5 MGD of temporary savings that are expected to erode over the next few years. Non-SWP savings included an additional 2 MGD from the impacts of water rates and plumbing codes (predicted in existing demand forecasts).

The Regional 1% Program

This report reviews annual progress of the 1% Program, which provides services to the regional water conservation efforts of the SWP. For this review, the 'region' refers to all customers served by the Seattle Public Utilities (SPU) water supply. SPU and 25 local water providers initiated the regional 1% Water Conservation Program in 2000, targeting water conservation savings of 1% per capita per year through 2010. The regional program includes expansion of existing programs and development of new cost-effective conservation measures as identified in the regional *Conservation Potential Assessment* (CPA, SPU 1998). Section 2 of this report reviews the short and long-term program design for the 1% Program.

2001 Goals and Strategies

The initial target for 2001 was to achieve 1.3 MGD in new long-term conservation savings. These savings combined with initial 'ramp-up' efforts from 2000 contributed to a two-year savings goal of 1.8 MGD, or the first '1%' of the multi-year effort. Average annual targets for subsequent years are expected to be near 1.8 MGD and provide 18 MGD in water savings by 2010.

The 1% Program targeted fixture and equipment rebates for residential and commercial customers to achieve 0.8 MGD of the 2001 savings. Rebate programs were designed to expand on previous success with residential washing machines and with a variety of commercial fixtures and technologies. In addition the 1% Program undertook development of new residential toilet rebates and distribution of free faucet aerators.

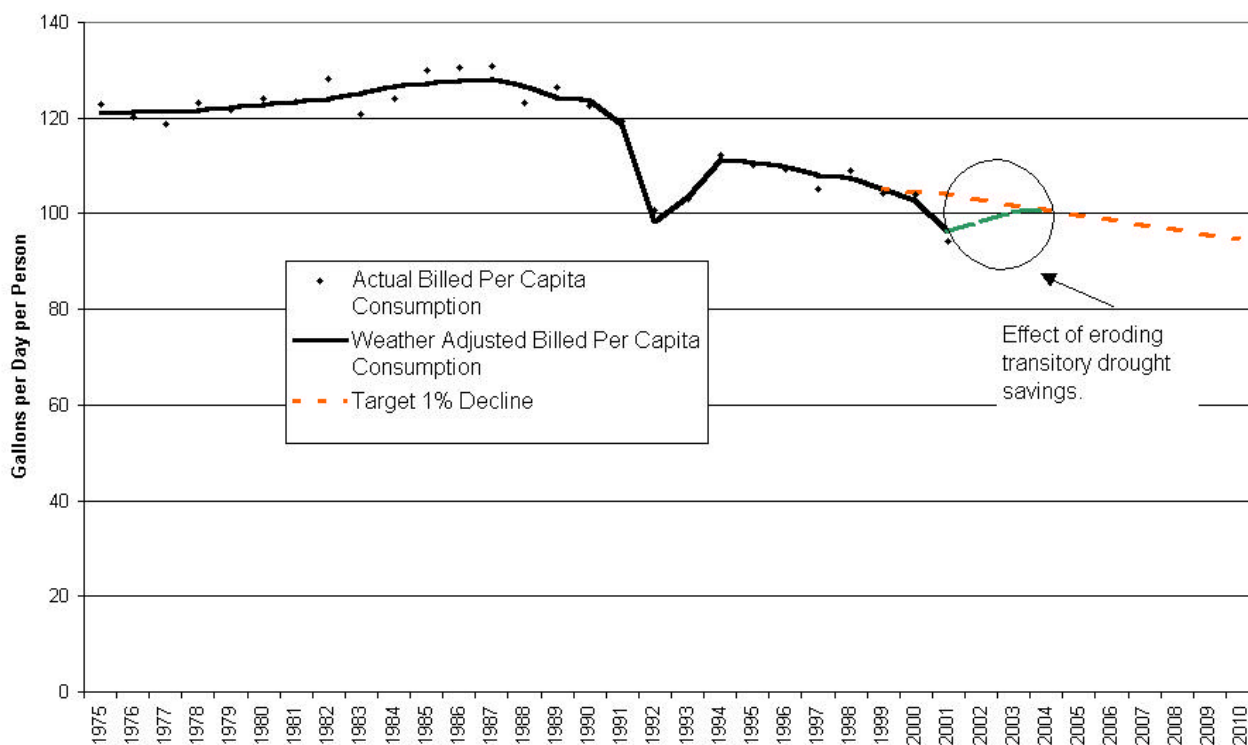
1% program outreach and technical assistance was focussed on delivering the remaining 0.5 MGD of targeted savings through permanent behavior changes and accelerated equipment and fixture upgrades. Specific sector goals and participation targets for both rebated and other conservation efforts are presented in Table 2.

Marketing strategies to increase rebates and other conservation employed mass media, direct mailings, new program materials, new web and hotline resources, seminars and workshops, agency partnerships and a host of targeted promotions. The water shortage messaging of 2001 provided significant new opportunities to expand rebates, increase permanent behavior changes, and accelerate fixture upgrades without rebates. Much of the 2001 drought messaging stressed temporary curtailment actions, but these behaviors become long-term conservation measures if the changes become permanent.

2001 1% Program Performance

Water use for 2001 dropped significantly due to a combination of factors. According to initial modeling and analysis, weather-adjusted water use was about 10 MGD below the forecast for 2001. This reduction does not include an additional 3 MGD from 2001 weather impacts. Chart 1 shows how weather and the 1% Program have affected per capita use. A more detailed description of Chart 1 is in Section 4, page 30.

Chart 1: Regional Per Capita Customer Use



New long-term conservation savings from 2001 are estimated to represent 4 MGD, with 2 MGD savings from rates and codes and 2 MGD savings from the 1% Program. Table 1 below provides estimates for temporary and long-term savings from 2001, with more detailed analysis provided in Chapter 4.

Table 1: New Water Savings Achieved in 2001 (MGD)

	New Long Term Customer Savings					Short Term Savings			Total ³
	1% Conservation Program		Rates	Code	Total	Drought ²	System	Total	
	Incentives	w/o Incentives				Curtailment			
Residential Indoor ¹	0.4	0.3	0.7	0.5	1.8	1.2	-	1.2	3.1
Residential Landscape	-	0.4	0.2	-	0.6	1.0	-	1.0	1.6
Commercial Domestic	0.0	0.3	0.1	0.3	0.6	0.9	-	0.9	1.5
Commercial Process	0.4	0.2	0.2	-	0.8	1.6	-	1.6	2.4
Commercial Landscape ¹	0.1	0.1	0.1	-	0.2	0.3	-	0.3	0.5
Total⁴	0.8	1.2	1.2	0.8	4.0	5.0	1.0	6.0	10.0

¹Includes Multi-family

²Includes impact of temporarily depressed business/economic conditions in 2001.

³Savings are weather-adjusted from 2001 forecast and do not include additional 3 MGD from 2001 weather impacts.

⁴Some totals may not add due to rounding.

The long-term conservation savings of 2 MGD are more than 50% above program targets for 2001, which was the second year of the program ramp-up. The increased attention from water shortage messages provided a unique boost for the program to surpass savings targets without greatly expanding program resources. Both outreach and rebate efforts were able to build on the public's heightened awareness of water supply and as a result delivered more 'bang for the buck'.

Conservation goals and estimated savings for each sector are summarized in Table 2 below. For each sector, savings are estimated for outreach efforts, incentives and curtailment messages:

Outreach savings include permanent conservation achieved without incentives. These savings include both permanent behavior change and accelerated fixtures (beyond rates and code) that were upgraded without rebates. These savings were estimated to be 1.2 MGD in 2001, more than double initial targets thanks to the added boost from water shortage messages. These estimates were based on information presented in Section 4.

Rebate savings include new fixtures and equipment upgrades that were supported with program incentives. Based on program records. These savings were estimated to be 0.84 MGD in 2001, just above program targets.

Curtailment savings include temporary behavior or operational changes, as well savings from other temporary impacts such as slower economic activity. These savings were estimated to be about 5 MGD.

Sector Highlights

Residential Indoor programs continue to ramp up in 2001. WashWise rebates increased by 27%, thanks to strong promotion with retail partners, media advertising and other outreach. Single family toilet rebates were introduced with two successful "Roundup" events, doubling rebate targets and increasing awareness region-wide. Multifamily toilet rebates were introduced in the fall. Conservation kit partnerships with Seattle City Light and Puget Sound Energy resulted in installation of nearly 100,000 faucet aerators. New program materials and messages were introduced to support new behavior changes.

Residential landscape

efforts built on new outreach and education partnerships with a dozen regional nurseries, distributing 4,000 discount soaker hoses and 15,000 educational fact sheets. New 'Naturals' guides on Smart Watering and Growing Healthy Soil provided regional residents with tools to reduce outdoor water use while having a healthy landscape. Beyond the nursery distribution, another 15,000 guides were distributed through home and garden shows and other venues. Radio and print ads promoted landscape conservation messages, program opportunities at local nurseries, and regional events.

Commercial, industrial and institutional

facilities received more than 120 financial incentives in 2001, more than double the number of projects from recent years. Major projects were implemented at Todd Shipyards, University of Washington, Sheraton Hotel and LaFarge Cement. Nearly 20 smaller projects provided rebates to eliminate pass-through cooling in refrigeration and ice machines. Free technical assistance, seminars and irrigation assessments were provided to hundreds more through the Water Smart

Table 2: 2001 Performance

PROGRAM SECTOR	BUDGET \$M	2001 WATER SAVINGS (MGD)			
		Goal	Conservation Achieved	% of Goal	Curtailment
Residential Indoor	\$1.75	0.40	0.66	165%	1.2
Outreach	\$0.25	0.10	0.30	300%	1.2
Rebates	\$1.50	0.30	0.36	120%	
Res. Landscape	\$0.51	0.20	0.35	175%	1.0
Outreach	\$0.33	0.20	0.35	175%	1.0
Rebates	\$0.18	0.00	0.00	-	
Comm Domestic	\$0.10	0.10	0.28	280%	0.9
Outreach	\$0.02	0.05	0.25	500%	0.9
Rebates	\$0.07	0.05	0.03	75%	
Comm Process	\$0.71	0.50	0.55	110%	1.6
Outreach	\$0.11	0.10	0.20	200%	1.6
Rebates	\$0.60	0.40	0.35	88%	
Comm Landscape	\$0.22	0.10	0.20	200%	0.3
Outreach	\$0.04	0.05	0.10	200%	0.3
Rebates	\$0.18	0.05	0.10	200%	
Other[#]	\$0.65				
Umbrella message	\$0.12				
Youth	\$0.09				
Evaluation & Model	\$0.33				
Administration	\$0.11				
Totals	\$3.94	1.30	2.04	157%	5.0
Outreach	\$0.75	0.50	1.20	235%	5.0
Rebates	\$2.54	0.80	0.84	106%	0.0
Other	\$0.65				

[#]Umbrella and Youth elements are considered drivers for other elements and do not have savings targets tied directly to them.

Technology and Water Efficient Irrigation Programs. New promotion partnerships were created with trade groups, other utilities and agencies, and other service providers.

Youth and education programs featured new school resources and training in 2001, including distribution of 20,000 conservation kits, two "Water Matters" teacher training workshops, and new web and curriculum resources.

Six purveyor working groups met throughout the year to guide the implementation of Residential Indoor, Residential Landscape, Marketing, Commercial, Education and Evaluation efforts.

Looking Ahead

The 1% Program will continue to build on success of 2001 efforts, while refocusing customers on long-term conservation opportunities. The conservation savings target for 2002 will be 1.1 MGD. This target is below the average annual program target of 1.8 MGD due to budget constraints and reduced program resources for 2002.

Residential indoor efforts will emphasize multifamily and low-income customers in 2002 where savings tend to be higher and more cost-effective. For single family customers, indoor efforts will focus on promoting washing machine rebates and providing education and support materials to help customers replace toilets and find and fix leaks. Landscape outreach will continue to target lawn and garden audiences with an integrated message, including nursery partnerships and promotions focussing on a comprehensive package of written materials.

Commercial targets and resources in 2002 will be similar to last year, aiming to maintain high participation levels without the water shortage attention. The program will continue to support a spectrum of cost-effective commercial measures through targeted recruiting, technical assistance and incentives.

Ongoing Performance Monitoring

The 1% Program regional ten-year conservation goal requires conservation expenditures of more than \$50 million during the coming decade – about \$5 million per year. Carefully tracking and evaluating program performance through efforts such as those included in this report will help meet the 1% goals in a timely and cost-effective manner. Monitoring program performance will ensure that resources are put to their best use and that the programs are managed for highest efficiency. This information will also help identify the need for mid-course corrections and fine-tuning adjustments as the program proceeds toward the goal. This document is the first of an annual series of reports designed to inform and guide the program toward its goal.

2. Program Design

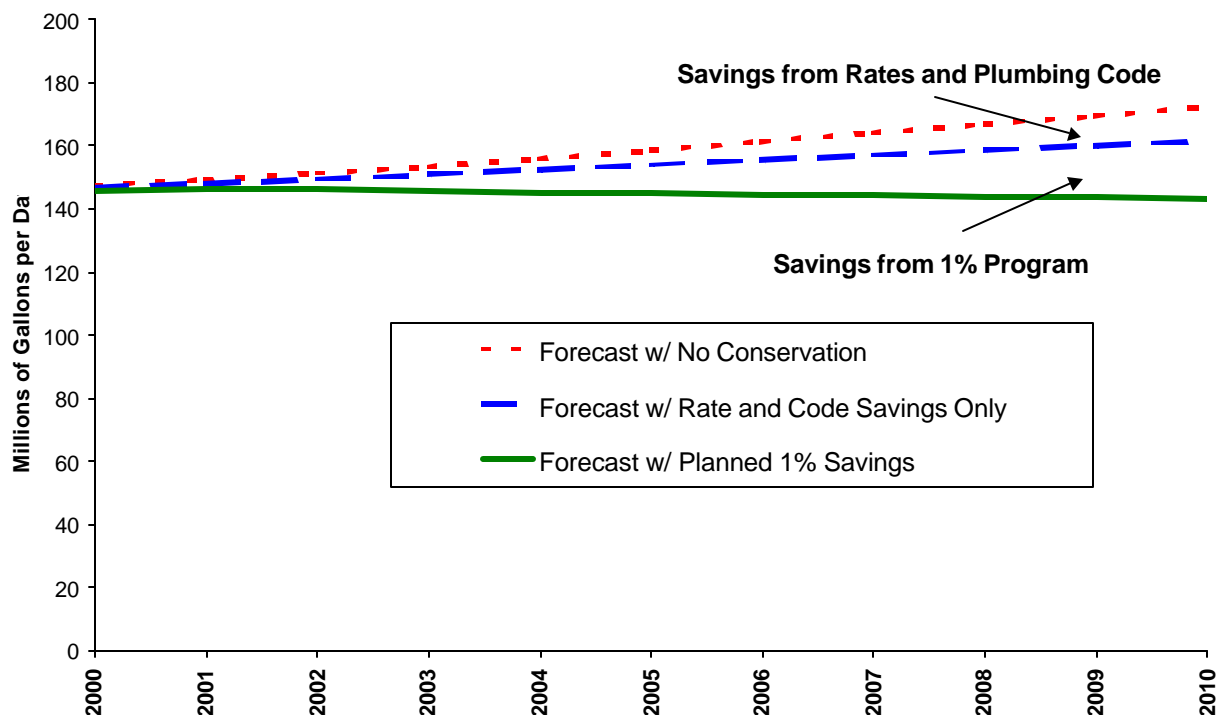
Regional 1% Program and 10-year Goal

The Saving Water Partnership is committed to an ambitious effort to reduce per capita water use in the regional service area by 1% every year until 2010. To accomplish the ten-year goal, local water providers will reduce per capita water use by about 1% each year for the next ten years. More detailed strategies and goals for the 10-year program and beyond are presented in the *10-Year Water Conservation Plan* (SPU 2002).

Chart 2 shows forecasted water demand (retail plus wholesale): 1) with no conservation; 2) with conservation savings from water rates and plumbing codes only; and, 3) with conservation savings from the 1% Program. Savings from rates and plumbing codes are expected to reach 11 MGD by 2010, and savings from the 1% Program will achieve an additional 18 MGD by 2010.

This report is focussed on the performance of the 1% Program. The conservation savings shown below from rates and code are those that would be achieved without the 1% Program efforts. Unless otherwise stated, all references to conservation in this report are to those arising from the 1% Program.

Chart 2: Water Demand and Conservation



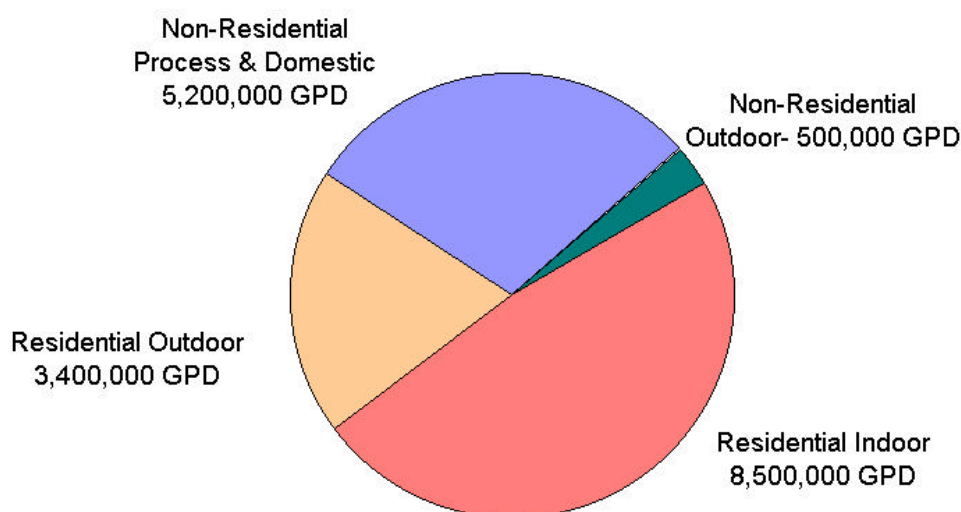
In 1998, SPU completed a water conservation potential assessment (CPA). The CPA provides a rigorous analysis of the cost, volume, and reliability of conservation opportunities available within Seattle's wholesale and direct service areas through 2020. The CPA found that substantial water savings, up to 31 MGD or 16% of water use in the peak season, could be

achieved over the next 20 years with no reduction in customers' ability to use water or their satisfaction with water services.

The cost of these savings is less than the cost of new peak season water supply. The 1% Program implements cost-effective conservation identified in the CPA over the next ten years. Chart 3 shows how the savings targets are to be achieved by various customer sectors.

Chart 3: 2010 Savings Targets by Sector*

Total Savings -- 18 Million Gallons Per Day



* Umbrella or schools elements are considered drivers for other elements and do not have savings targets tied directly to them.

The conservation savings will result from an improvement in water use efficiency in the residential, commercial, industrial, institutional and landscape sectors. The 1% Program will rely on conservation programs to improve customer water use efficiency through a strategy that integrates information, education, incentives, rates, codes and regulations.

10-Year Measures and Strategies

Supported by public information and education, programs promoting and encouraging the use of efficient water-using equipment, behavior, and technology are the backbone of the 1% Program conservation strategy. Overall conservation messaging and outreach supports specific targeted program elements.

Since the early 1990's, the SWP has designed and successfully conducted several ongoing targeted programs. The success of these programs during the 1990's is quantified in Section 4. These programs are being continued and expanded, including: *Water Smart* commercial

incentives, *Water Efficient Irrigation Program* for commercial customers, and WashWise water-efficient washing machine rebates. In addition, new targeted hardware and behavior programs have been designed and are being implemented for residential landscape and residential indoor uses. These new programs are discussed in more detail in Section 3.

The initial years will concentrate on getting additional savings from the expansion of ongoing programs, and gearing up for implementation of new programs. Later years will reap savings from new programs as well as continued savings from ongoing program elements. Major savings will come from residential domestic use programs, more efficient residential landscaping, and commercial/ industrial cooling and process improvements. Table 3 below shows where specific savings will come from and how the programs will achieve them.

For further information on the long-term conservation plans, see *10 Year Conservation Plan*, SPU, 2002.

Table 3: 10-year Program Measures and Strategies

Sector	Types of Measures	Types of Strategies
Residential indoor Save 8.5 MGD by 2010 =7% of residential indoor use	<ul style="list-style-type: none"> ➤ Replace toilets, faucets, showers (single family & multifamily) ➤ Fix leaks ➤ Change behaviors (flushes, faucet use, showers, full loads) 	<ul style="list-style-type: none"> ➤ Rebates and promotion to accelerate code replacement ➤ Behavior messages through direct and indirect media
Residential landscape Save 3.4 MGD by 2010 =20% of residential landscape use	<ul style="list-style-type: none"> ➤ Reduce lawn watering ➤ Improve Irrigation performance ➤ Change lawn & garden practices 	<ul style="list-style-type: none"> ➤ Direct & indirect media outreach ➤ Technical materials ➤ Irrigation efficiency
Commercial/process/domestic Save 5.2 MGD by 2010 =10% of commercial/process/domestic	<ul style="list-style-type: none"> ➤ Upgrade toilets and equipment for cooling, process other uses ➤ Improve cooling performance 	<ul style="list-style-type: none"> ➤ Technical assistance ➤ Financial incentives
Commercial landscape Save 0.5 MGD by 2010 =11% of commercial landscape	<ul style="list-style-type: none"> ➤ Upgrade equipment (irrigation controls) ➤ Improve scheduling & maintenance 	<ul style="list-style-type: none"> ➤ Assessments and technical assistance ➤ Financial incentives

Supporting Elements

Sector	Types of Measures	Types of Strategies
Youth Education Supports savings in other sectors	<ul style="list-style-type: none"> ➤ Conservation awareness and residential measures 	<ul style="list-style-type: none"> ➤ Educator training and resources ➤ Classroom and take-home materials ➤ Watershed tours
Overall messaging Supports savings in other sectors	<ul style="list-style-type: none"> ➤ Conservation awareness and residential and commercial measures 	<ul style="list-style-type: none"> ➤ Targeted marketing

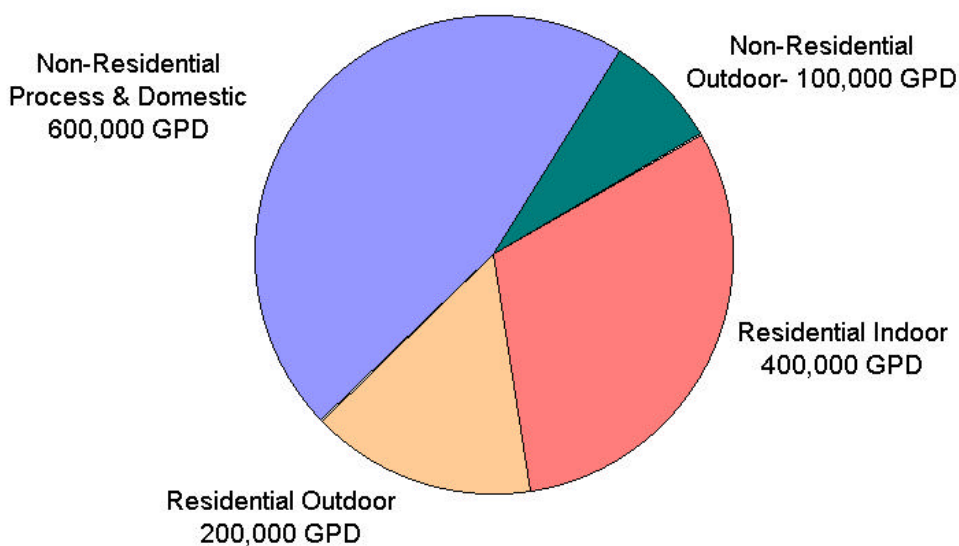
2001 Program and Goals

The year 2001 represents the second of two “ramp-up” years for the 1% Program with an overall savings target of 1.3 MGD. For all sectors, new conservation efforts fall in two categories: 1) financial incentives to replace fixtures or equipment and 2) outreach and assistance to change behaviors or upgrade equipment without financial incentives. This year, established incentive programs were intended to build on past success, while new residential incentives and other assistance and outreach programs were expanded.

Chart 4 shows the 2001 savings targets planned for various customer sectors.

Chart 4: 2001 Savings Targets by Sector*

Total Savings -- 1.3 Million Gallons Per Day



* Umbrella or schools elements are considered drivers for other elements and do not have savings targets tied directly to them.

2001 Measures and Strategies

Initial program plans for 2001 were revised in the spring in response to water supply conditions. These affected how behavior change and incentive mechanisms reached customers, as well as the urgency of the request for reductions in customer water use. Programs and promotions focusing on behavior change incorporated short-term curtailment messages related to the drought, while financial incentive programs gained higher than expected participation through increased awareness.

Priorities shifted to adapt to the challenges and opportunities arising from water supply conditions. Overall messaging was modified toward requests for voluntary short-term reductions to respond to the drought. Customers were asked to reduce their near-term consumption by 10% while implementing long-term conservation actions and fixtures. Outreach

strategies included paid advertising about water conservation and the drought, announcements about a residential toilet rebate offer and the promotion of a new water conservation web site (savingwater.org) and factsheets.

The residential indoor sector fast-tracked toilet rebate programs for both single family and multifamily customers. This sector also initiated a low-income rebate program while efforts began on toilet rebates. The residential outdoor sector partnered with nurseries on a soaker hose rebate offer and distribution of new educational guides. In the commercial sector an increase in collaboration with other conservation agencies and trade organizations developed, outreach efforts were directed at specific commercial targets and financial incentive programs saw an upswing in participation through vendor driven promotion and increased customer awareness.

Table 4: 2001 Measures and Strategies

Types of Measures		Types of Strategies	
RESIDENTIAL INDOOR (2001 Target = 0.4 MGD)			
➤ Replace washing machines	➤ WashWise rebates		
➤ Replace toilets & faucets (single family & multifamily)	➤ 2 toilet rebate events		
➤ Fix leaks	➤ Recruit multifamily owners		
➤ Change behaviors (flushes, faucet use, shower time, full loads)	➤ Behavior messages through direct and indirect media		
	➤ Collaboration with energy utilities		
	➤ Promotion through media, mailing, community events		
	➤		
RESIDENTIAL LANDSCAPE (2001 Target = 0.2 MGD)			
➤ Reduce lawn watering	➤ Radio promotion		
➤ Improve irrigation performance	➤ Nursery partnerships		
➤ Change lawn & garden practices	➤ Technical materials		
COMMERCIAL PROCESS/DOMESTIC (2001 Target = 0.6 MGD)			
➤ Upgrade toilets and equipment for cooling, process other uses	➤ Technical assistance, assessments, workshops		
➤ Improve cooling performance	➤ Financial incentives		
	➤ Targeted promotion through vendors, trade groups, agencies		
	➤ Large customer recruiting		
COMMERCIAL LANDSCAPE (2001 Target = 0.2 MGD)			
➤ Upgrade equipment (irrigation controls)	➤ Assessments, workshops and technical assistance		
➤ Improve scheduling & maintenance	➤ Financial incentives, soil moisture sensors		
	➤ Targeted recruiting and promotion		

Supporting Elements

Types of Measures		Types of Strategies	
YOUTH EDUCATION		(Supports savings in other sectors)	
➤ Conservation awareness and residential measures		➤ Educator training and resources	
		➤ Classroom and take-home materials	
OVERALL MESSAGING		(Supports savings in other sectors)	
➤ Conservation awareness and residential and commercial measures		➤ Targeted marketing	

3. PERFORMANCE BY SECTOR

Residential Indoor Use

PROGRAM DESCRIPTION

The residential indoor sector focuses on single and multifamily customers, delivering conservation savings through accelerated fixture upgrades and permanent behavior changes. The program provides rebates, technical assistance, and education. The rebates and information are promoted through print and broadcast advertising and through targeted outreach in the form of direct mail, workshops and displays at local festivals and regional events and trade shows.

2001 GOALS AND STRATEGY

The residential indoor services were tasked with achieving 400,000 gallons per day (GPD) in new permanent water savings, mostly from rebated fixtures. About 25% of the savings were targeted for new behaviors and additional fixtures beyond normal rate and code replacement. Program strategy focused on boosting ongoing rebate programs, developing new rebates and educating customers about long-term behavior changes. Specific elements included:

- Washing machine rebates – SWP staff continued to promote and administer WashWise rebates for residential machines and support the Laundrywise rebates administered by Seattle City Light for common-area machines. These programs leverage water and energy conservation messages and dollars to educate about and encourage the installation of efficient machines.
- Toilet rebates –SWP staff planned to introduce limited toilet rebates for single family and multifamily toilet customers. They were designed to motivate customers who were not already planning on upgrading old fixtures. Single family rebates were distributed through two 'Roundup' events and multifamily rebates were advertised in publications targeted to property owners and managers.
- New utility collaboration– SWP coordinated with Seattle City Light and Puget Sound Energy to promote and deliver conservation kits to customers in response to the energy shortage and electricity price increases in 2001. Customers received a mailing that included a card that could be returned for a free conservation kit. The kits included a low-flow faucet aerator, a flow-rate test bag and education materials. The joint Seattle City Light kit included two compact fluorescent bulbs and had a much higher response rate.
- Outreach– The program developed and distributed new printed materials, focussing on identifying and fixing leaks, replacing toilets, replacing washing machines, and practicing efficient behaviors. Many of the materials were modified for promotion with water shortage messages and outreach.

2001 PERFORMANCE

Residential indoor conservation produced an estimated 660,000 GPD in new long-term savings (footnote Section 3). Rebated fixtures produced 360,000 GPD in new savings, more than four times the savings from 2001 rebates. Savings from new behaviors and non-rebate fixtures produced an additional estimated 300,000 GPD, triple the 2002 target. Heightened interest from water shortage messages provided a major lift to program resources. In addition, residents initiated more than 1 MGD of temporary curtailment actions.

Table 5: 2001 Residential Indoor Savings

	Major focus	Budget	Goal MGD	Estimate MGD
Outreach & education	Toilets, leaks, behaviors	\$0.25	0.10	0.30
Rebates & promotion	Washing machines, toilets, faucet aerators	\$1.50	0.30	0.36
Total		\$1.75	0.40	0.66

Residential indoor efforts and results were significantly increased over previous years. New rebates and materials were introduced and then accelerated to build on the water shortage advisory. Washing machine rebates, toilet rebates, and faucet aerator distribution all surpassed past distribution and 2002 targets:

Washing machine rebates increased by 27% over 2000, with more than 60% of WashWise incentive dollars expended in purveyor areas. Increased materials in retail venues, a fall promotion, and water shortage messaging all contributed to increased rebates.

The two **Toilet Roundup Events** were popular with participants and more than doubled the event objectives. More than 4,600 inefficient toilets were collected at the two events and the events generated substantial media attention to encourage other residents to upgrade older fixtures. Promotion of the event received a Totem Award, Special Events, Non-Profit, from the Puget Sound Chapter of the Public Relations Society of America.

A multifamily toilet replacement program was initiated in fall of 2001. By year-end, more than one dozen buildings had completed projects.

Low-income toilet replacement projects were initiated in fall of 2001 with Housing Resource Group, Seattle Housing Authority, King County Housing Authority and Plymouth Housing. Most of these projects are scheduled for 2002 and will include upgrading toilets and other fixtures.

Table 6: Fixture Rebates

Rebated Fixtures	Fixture Targets	Fixture Totals	GPD
Single family toilets	2,000	4,892	111,300
Multifamily toilets	-	100	2,400
Low income toilets	-	810	28,000
Free faucet aerators	75,000	100,500	100,500
Washing Machines	8,000	8,275	115,600
Coin Operated Washers	-	96	2,016
TOTAL			359,816
Target			300,000

Program messages and materials included updated fact sheets and advertising about conservation behaviors and incentives. Messages were delivered through television and radio advertising, public festivals and events, website and phone hotline information requests. In program surveys conducted in fall 2001, (WashWise Survey, Dethman & Associates, 2002 SPU/Purveyor Water Conservation Survey, Dethman & Associates, 2001) many customers reported high satisfaction with residential programs and reported adopting new permanent conservation behaviors.

A comprehensive review of all residential programs will be included in the *Residential Conservation Evaluation* to be completed in May 2002.

LOOKING AHEAD

Residential indoor efforts will emphasize multifamily and low-income customers in 2002 where savings tend to be higher and more cost-effective. Multifamily assistance will focus on reaching large and small housing providers and property managers to deliver water savings across many areas such as toilets, showerheads, faucets, clothes washers, and landscaping.

For single family customers, 2002 efforts will focus on promoting washing machine rebates and providing education and support materials to help customers replace toilets and find and fix leaks. Program information will continue to target savings through behavior change. Outreach efforts will continue to look for opportunities to partner where it makes sense, to leverage our presence and cost-effectiveness, and integrate messages.

Residential Landscape Use

PROGRAM DESCRIPTION

This sector targets water used for single family landscapes. To effectively reach the target audience, a comprehensive approach that addresses multiple resources is used. The umbrella term for this integrated approach is the Natural Lawn & Garden. Program efforts focus on research and data gathering, outreach and education, program incentives and evaluation.

The long-term goal, over ten or more years, is to build a new customer ethic with respect to landscapes, replacing traditional and resource intensive practices with those that more closely follow a natural model. Conservation measures focus on practices and choices that are compatible with site conditions to provide a beautiful and healthy landscape requiring limited care, reduced use of inputs such as water and fertilizer, and providing benefits associated with less solid waste diversion, cleaner air and water, and energy conservation.

2001 GOALS AND STRATEGY

Residential landscape conservation was expected to reduce long-term water use by about 200,000 GPD in 2001. The strategy to achieve these savings focussed on delivering an integrated message through increasing awareness, providing educational materials, and creating incentives:

- Raising awareness among targeted customers through media and industry partnerships on water efficient landscape practices.
- Educating targeted consumers about best landscape practices with new Natural Lawn & Garden guides. The SWP partnered with local nurseries to obtain their assistance in distributing the "Naturals" brochures, offering space for classes, and participating in soaker hose discount/rebate program.
- Creating behavior change incentives to draw attention to new messages and education materials. Soaker hose rebates offered in conjunction with nursery discounts served three objectives: encouraging efficient watering; highlighting program materials and best practices; and supporting nurseries during the water shortage advisory.

2001 PERFORMANCE

Residential landscape savings exceeded targets in 2001 with heightened attention from water shortage messages. The consumption analysis detailed in Section 4 shows new residential landscape practices produced about 350,000 GPD in long-term conservation savings - nearly double the 2001 target. These savings are annual averages – peak season savings are triple those levels.

Table 7: 2001 Residential Landscape Savings

Media attention and customer awareness under the water shortage advisory provided a 'free' program boost for increased savings without additional resources. Customers saved an additional 500,000 GPD in temporary savings through curtailment measures.

Major focus		Budget \$M	Goal MGD	Estimate MGD
Outreach & education	Radio and print ads, nursery partnerships, educational materials	\$0.33	0.20	0.35
Rebates & promotion	Soaker hoses ¹ , future research for on-site assessments, irrigation devices	\$0.18	0.00	0.00
Total		\$0.51	0.20	0.35

1. Soaker hoses attract customers to educational materials that produce future savings

Program highlights include:

Radio ads targeted avid gardening customers with messages about free conservation workshops conducted by radio personalities, product promotions, web site connections, and behavior changes. The ad produced with radio personality Ciscoe Morris ran 69 times and the ad produced with Scott Connor ran 116 times during the month of May. In addition, the Water

Conservation Partnership paid for ad time on KUOW, which aired 36 times from April through June. Other media ads and stories related to the water shortage advisory focused primarily on temporary curtailment, but provided additional attention to long term conservation messages.

Table 8: Customer Outreach

Contacts	Targets	Actual
Naturals guides	30,000	32,000
Soaker hose rebates	8,000	4,065
Nursery class attendees	-	160

Print ads reached more general gardening audiences less likely to listen to radio shows. These included "advertorials", soaker hose promotions and ads to influence behavior. Twenty-eight ads were printed in seven publications. Half the participants in soaker hose rebates reported learning of the discounts through the newspaper ads. Nurseries reported significant peaks in soaker hose sales immediately following ads.

Nursery partnerships exceeded targets as an opportunity for educating customers through classes, materials distribution and soaker hose incentives.

Partnerships were developed with 12 local nurseries, exceeding the original target of eight partners. Eight classes were offered, drawing approximately 160 attendees. Nurseries informed SPU and purveyors that the benefits of participating in the soaker hose partnership exceeded their expectations. Many sold more hoses than they anticipated, made additional sales in other products, attracted new customers and helped customers take positive action during the drought.

Table 9: Customer Behaviors

Regional Survey, November 2001

	1999	2001
Water lawn twice per month or less	54%	76%
Put mulch on beds	54%	58%
Add compost	66%	51%
Low volume watering	29%	26%

Landscape industry partnerships with Washington Association of Landscape Professionals, Washington State Nursery and Landscape Association and the local chapter of the Irrigation

Association leveraged public and industry concern over the drought. The partnership printed six ads in two publications encouraging water efficient landscaping during May and June.

Two new resource guides and one how-to fact sheet were distributed covering Smart Watering, Growing Healthy Soil and Saving Water with Soaker Hoses. Over 30,000 new guides were distributed through partner nurseries, the 2001 Northwest Flower and Garden Show, purveyor offices, Master Gardener clinics and other events. These guides have already proven useful to target audiences. Thousands of customers received the two guides with soaker hose discounts, and of the 50% of the surveyed customers who received them, over 80% reported reading the guides.

Soaker hose rebates proved a successful 'hook' for drawing customer interest and promoting Natural Lawn and Garden practices. In this first year of soaker hose incentives, customers purchased 4,065 hoses. While this did not meet the intentionally ambitious distribution goal of 8,000, successful experiences from nurseries and customers helped reinforce the desirability of working with nursery partners and using an incentive hook to draw attention to the Naturals message. In terms of causing immediate customer behavior change, over 80 percent of soaker hose recipients reported installing the hoses. Unfortunately, many participants did not cover their hose with mulch, a key step for conserving water and maintaining the longevity of the hose. Most nurseries will likely improve their preparation in 2002 leading to more effective distribution of soaker hoses and fact sheets.

A complete review of residential programs is contained in a separate report: *Residential Conservation Evaluation* (SPU, May 2002).

LOOKING AHEAD

Program efforts will continue to target lawn and garden audiences with an integrated message in 2002. New guides will be added in 2002 on Choosing the Right Plants and Natural Pest, Weed & Disease Control. In addition, Seattle's Composting at Home brochure will be updated to fit in with the other Natural guides. Seattle is providing the composting guide for regional use in 2002.

Partnerships will continue with nurseries as a distribution channel for materials and messages, and as an ongoing effort towards "market transformation". The program will seek to expand the number of nursery partners, the visibility and subsequent distribution of the Natural guides at nurseries and nursery staff awareness of landscape program messages. Soaker hose rebates will be used again to "hook" the customers' attention to our program messages. An on-site landscape assessment program will be aimed at our highest use customers, particularly where it appears there is significant savings potential. Research will focus on testing cutting edge irrigation technologies to assess their suitability for use in our service area.

Commercial Process and Domestic Use

PROGRAM DESCRIPTION

The Water Smart Technology program provides free technical assistance and financial incentives to reduce water use at commercial, industrial and institutional facilities. Conservation opportunities include replacing toilets and urinals, converting ice machines, refrigeration and other pass-through cooling, replacing commercial clothes washers, upgrading air compressors and other medical equipment, process water recycling and reuse, cooling tower improvements, and other technologies. Program staff and consultants provide efficiency solutions through site assessments, technical review and program materials. Program incentives provide standard rebates or financial incentives of up to 50% of the installed costs for any cost-effective measure and often reduces participant paybacks to less than two years.

2001 GOALS AND STRATEGY

The Water Smart Technology Program had a water savings target of 600,000 GPD for 2001, triple the targets for previous years. Seventy-five percent of the savings (450,000 GPD) were expected from financial incentives, with the number of rebated projects increasing from 50 to 125 facilities. The remaining 150,000 GPD savings targeted new conservation operations or fixtures not supported by program rebates.

Program delivery and outreach focused on three strategies:

- Promotion through service and equipment vendors;
- Partnerships with trade groups, electric utilities, agencies and other service providers; and
- Targeted recruiting of select business categories, including large customers, hospitality, medical facilities, and schools and institutions.

These strategies and priorities were developed in the *Commercial Delivery Strategy* completed in May 2001.

2001 PERFORMANCE

Improvements at commercial facilities produced permanent water saving estimates of more than 800,000 GPD in 2001. Below initial targets, about 385,000 GPD of savings were directly tied to rebate projects. The remaining 460,000 GPD were from new behaviors, operations or equipment implemented without rebates. These savings were nearly triple initial targets, reflecting increased emphasis from water shortage messages.

Table 10: 2001 Commercial Process and Domestic Savings

Major Focus		Budget \$M	Goal MGD	Estimate MGD
Outreach & assistance	Technical assistance, workshops	\$0.13	0.15	0.46
Rebates & administration	Toilets, cooling, other	\$0.68	0.45	0.38
Total		\$0.81	0.60	0.84

Regional businesses also temporarily reduced consumption by an estimated 2.5 MGD due to curtailment actions, reduced economic activity and other short-term factors.

2001 program accomplishments include:

- Major incentive projects completed at Todd Shipyards (salt water pumping), University of Washington (cooling), Sheraton Hotel (exhaust air), and LaFarge Cement (water reuse).

- Increased focus on emerging conservation measures such as ozone laundry water systems and medical vacuum pumps.
- Assisted major customers with long-term conservation planning, such as University of Washington, Port of Seattle, Evergreen Hospital.
- Increased partnerships with the Washington Department of Ecology, Seattle City Light, Puget Sound Energy, Restaurant and Hotel Associations, Medical Industry Roundtable, Chamber of Commerce (Business and Industry Resource Venture) and other trade groups.
- Successful workshops for public facilities, equipment vendors, restrooms and other targeted audiences.
- Promotion of successful commercial projects such as Pike Place Market and Ivar's Restaurant through media events and water shortage press releases.

Table 11: Commercial Incentive Projects		
Process Measures	Projects	GPD
Washing Machines	5	5,500
Refrig./ Ice Machines	19	35,000
Other Single-pass	9	26,000
Process Water	5	27,000
Cooling Tower	1	173,000
Other Technology	3	88,000
2001 Total	42	354,000
2001 Target	75	400,000
Domestic Measures		
Toilets	16	15,000
Urinals	12	15,000
2001 Total	28	30,000
2001 Target	50	50,000

A comprehensive review of commercial programs and savings will be included in the *Commercial Conservation Evaluation* to be completed in June 2002.

LOOKING AHEAD

Commercial targets and resources in 2002, will be similar to 2001. Maintaining similar participation levels will be challenging without the water shortage spotlight. The program will continue to support a spectrum of cost-effective measures through technical assistance and incentives. Outreach will include specialized training and workshops. Recruiting and assistance will continue with many of the targeted sectors from 2002 including large users (Port, UW and others), purveyor customers, office and property management, hotels and restaurants, hospitals and medical research, manufacturing and processing, and education.

Commercial Landscape and Irrigation Use

PROGRAM DESCRIPTION

This program focuses on increasing landscape and irrigation efficiency at commercial, institutional and multifamily facilities. The Water Efficient Irrigation Program (WEIP) provides free professional site assessments, workshops, other technical assistance, and financial incentives to help commercial customers upgrade systems and reduce summer water use. Conservation opportunities include improved irrigation controls and scheduling, upgraded system components, and efficient soils and plants. The WEIP program targets site owners, facility managers and landscape and irrigation industry professionals.

2001 GOALS AND STRATEGY

New commercial landscape efficiencies were expected to produce average savings of 100,000 GPD in 2001. Half of the savings were targeted for rebate projects. These new savings represent about 2% of total commercial landscapes.

The program emphasized free landscape assessments and audits in 2001 for eligible customers. Professional landscape and irrigation auditors were contracted to visit sites to check an irrigation system's performance and make recommendations for improving efficiency. To increase program awareness in 2001, the WEIP conducted a collaborative outreach effort with the Water Smart Technology (WST) program as well as other efforts directed toward irrigation-specific audiences:

- Workshops for landscape professionals, property managers and other irrigation customers to educate them about the costs of a poorly managed system, efficiency opportunities, and how to qualify for financial incentives.
- Direct mailings related to water shortage to likely irrigation customers.
- Direct mail and paid advertising promotion of free rain sensors for irrigation systems.
- Increased promotion and assistance through sector targeting conducted by the Business and Industry Resource Venture (a partnership with the Greater Seattle Chamber of Commerce).

Saving Water Partnership Staff work continually to improve partnerships with landscape and irrigation professionals to promote a water conservation ethic in businesses and to increase awareness of WEIP incentives for customers.

2001 PERFORMANCE

Heightened drought awareness and new program promotion produced conservation savings nearly double sector targets, including about 98,000 GPD from rebate projects and another 100,000 GPD from non-rebated projects. These savings are annual averages - long-term peak savings were triple those levels.

Local facilities also responded to water shortage messages with an additional 300,000 gallons of curtailment savings through adopting temporary restrictions.

Table 12: 2001 Commercial Landscape Savings

	Major focus	Budget \$M	Goal MGD	Estimate MGD
Outreach and education	Audits, Rain sensor promotion	\$0.04	0.05	0.09
Rebates & administration	Irrigation upgrades	\$0.18	0.05	0.09
Total		\$0.22	0.10	0.18

Program highlights include:

- Conducted 40 irrigation system audits, more than tripling participation from 2000, and provided specific efficiency recommendations.
- Targeted workshop for public sector landscape staff.
- Rebates to Seattle Parks and Recreation for connecting 43 sites to one of three central control systems that will allow for better management of scheduling and leak detection.
- Rebates to University of Washington for upgraded systems at five sites for replacing controllers, irrigation heads, and master valves to reduce leaks.
- Rebates to five other projects, including the Seattle Times in Bothell to install a centrally controlled irrigation system that automatically adjusts to the weather and detects leaks.

Table 13: Landscape Assistance

Technical assistance	2001
Assessments / Audits	40
Rebated measures [#]	
Schedule & weather controls	50
System performance	50
Install rain sensor	4
Total sites	53
Target	50
[#] Many sites have multiple measures	

A comprehensive review of commercial programs and savings will be included in the *Commercial Conservation Evaluation* to be completed in June 2002.

LOOKING AHEAD

In 2002, the Water Efficient Irrigation Program will continue to expand audits and financial incentives. Outreach efforts will include specialized training and workshops for landscape and irrigation professionals and the continuation of the rain sensor promotion.

Overall messaging

PROGRAM DESCRIPTION

The Overall Messaging effort is designed to build the ethic of water conservation in the region over a sustained period of ten years, and to do so by tying the residential, commercial, indoor, outdoor and school components of the Saving Water Partnership together as one identifiable program. The target audience for this messaging is all SWP water utility customers.

2001 GOALS AND STRATEGY

The Overall Messaging supports conservation savings achieved primarily on the residential indoor and landscape sectors. The messaging work does not have a separate savings target. In 2001 the campaign planned to raise customer awareness of why there is a need to conserve water at a rate of 1% per year in our region. Water shortage conditions necessitated a change in course, however, and the goal of the campaign became development and implementation of a strategy that would address a short-term concern — asking customers to temporarily reduce their use by 10% — without compromising the program's long-term conservation goals.

The major components of the 2001 outreach strategy:

- Partnerships with TV media for a broader reach of our target audience. Radio and television advertising and media events to raise awareness of why and how to conserve.
- Targeted marketing to promote specific conservation events and special rebate offers.
- Weekly press release on water shortage and current supply combined with specific conservation tips and accomplishments.
- Consistent branding and program materials under the 'What Will You Save Today?' logo.

2001 PERFORMANCE

Media partnerships were secured with KING-5 and KOMO-4 TV stations to create and run spring and summer ads about water conservation and the drought. Three TV ads were created that aired throughout the month of May including the sweeps period, the most watched period during the annual season.

By partnering with the stations, we were able to double our message exposure as KOMO and KING both bought half of the ad "buys", allowing us to purchase \$300,000 worth of commercial TV time for \$150,000. Both stations produced the ads for free.

During the last week in July and the first week of August, both KOMO and KING TV broadcast an animated ad for the Great Toilet Roundup that was held in Bellevue. The event attracted hundreds of people who received \$40 for each new low-flush toilet they purchased and for recycling their old commode.

Table 14: Customer Awareness
Sound Stats Phone Survey

10/01	
65%	Changed behavior or purchased a product to use less water
92%	Continue to use less water
71%	Gave "good" rating – the highest on a three point scale - for the efforts of their local water utility to manage water supply
❖ Sound Stats was a monthly phone survey of regional customers conducted between April and October 2001	

Event promotions - The "Great Flush-Off" media event in June compared low volume and high volume flush toilets. This event received extensive coverage by most Seattle TV, radio and newspapers announcing the kick-off of the residential Toilet Rebate offer leading up to the Great Toilet Roundup. Promotion of the two toilet 'Roundups' received a Totem Award from the Puget Sound Chapter of the Public Relations Society of America.

Festivals – Our conservation messages were present at KOMO Kids' Fair; Highline Festival; Tukwila Festival; Northshore and Woodinville Water Festival; Redmond Derby Days; Olympic View Festival and a number of smaller neighborhood events.

Customer Assistance - Savingwater.org was initiated and established as the regional water conservation information web site, with links to water supply information. The 684-SAVE hotline was established as a water conservation call-in center where people could get answers to their questions about saving water. Fact sheets were developed and distributed to help people answer questions regarding such topics as how to fix leaks, how to purchase a water efficient clothes washer, efficient toilets, rain barrels, and other conservation opportunities. Training manuals and information for customer service staff and speaker's bureau participants were developed as another avenue for distributing our messages.

LOOKING AHEAD

Looking ahead, we are currently conducting market research with other water utilities throughout Puget Sound with the idea of developing a region-wide water conservation campaign. Such a campaign could begin in 2003 and would be the first such coordinated effort on a large scale undertaken by the utilities.

Youth and Education

PROGRAM DESCRIPTION

An important component of the regional strategy is a partnership with schools to raise school age youth's awareness of precious water resources and the need to use them wisely through conservation. The School Resources Program is a collaborative effort that provides resources on water and water conservation to school districts and private schools throughout the service region. In partnering with a number of school districts to develop these resources concurrently, an economy of scale is achieved. The partnership includes utility education staff working closely with school district curriculum staff to identify and meet training and material resource needs.

2001 GOALS AND STRATEGY

School resources support savings achieved by the residential programs and do not have a separate water savings goal. In 2001, school resources strategies included:

- holding regional strategy meetings to coordinate efforts that include school staff,
- developing and distributing educational resources for regional school classes,
- Providing in service professional development opportunities for school district staff and
- evaluating effectiveness of professional development activities and educational resources.

2001 PERFORMANCE

The program conducted a "Water Matters" teacher workshop in 2001 at Northshore Junior High, similar to the one conducted in Bellevue in 2000. Twenty-three educators attended from throughout the region and gave positive reviews on the content and usefulness of the workshop. In addition, 20 surveys were distributed to local teachers for more feedback on training and resources.

Table 15: Youth Resources

Activity	Target	Totals
Conservation kits	20,000	20,000
Posters distributed	5,000	5,000
Extra field trips	8	5

In response to the drought, a special water conservation kit was developed for elementary age students. This kit contained an information sheet with instructions, a device to save water and conservation tips. By September 2001, 20,000 kits had been distributed regionally. Copies of the popular "Your Clean Water Connection" poster were distributed through our school partners. A total of 5,000 posters were given out for teachers to use in the classroom.

New resources developed for regional educators included:

- An on-line Cedar Virtual Watershed Tour
- A Student Water Saver Kit
- A new conservation activity station with a "What Will You Save Today?" theme

- A “Shared Waters” student activity booklet on conservation and salmon

Funding for extra field trips to both the Cedar and Tolt Watersheds occurred at reduced levels. This was due to construction of the new Education Center and development of new programs there. The new Tolt Filtration Plant was an opportunity for developing a field trip for older students and teachers.

Six meetings were held with members of the regional educator advisors group, consisting of Seattle, Northshore, Bellevue, Highline, Lake Washington and Shoreline school districts. Members provided recommendations and reviews of teacher workshop materials, conservation kits, watershed tours, reading materials and prospective ideas for web site development.

LOOKING AHEAD

The School Resources Program will continue to build on the current strategy through improving educational resources and educator training. Over the next few years, the program expects to refine current tools and add new ones, including: an improved youth education web site with more interactive kid's pages; a revised "Water Matters" teacher workshop for multiple classroom settings; a new teacher Awards program to recognize excellence in conservation education; a Tolt Filtration Plant tour for secondary students and teachers; conservation activities for the new Watershed Education Center; new classroom activities related to the regional water poster; an improved water conservation booth for youth at community festivals; and advertising using Bert the Salmon for school age audiences.

Evaluation and Monitoring

PROGRAM DESCRIPTION

Ongoing program evaluation is essential for designing and managing effective programs, monitoring results, and achieving conservation goals in a timely and cost-effective manner. Monitoring, process evaluation and program impact evaluation all ensure that resources are put to their best use, that programs are managed for optimum results, and that effective adjustments are made as program implementation proceeds.

Program evaluation includes accurate tracking of program statistics, resources and activities. Process evaluation reviews participant satisfaction, non-participant awareness and barriers, and opportunities for program improvement. Impact evaluation examines program results, accuracy of initial program estimates and service satisfaction.

The Conservation Potential Assessment also guides effective program implementation by identifying potential conservation opportunities and costs.

2001 GOALS AND STRATEGY

Evaluation efforts in 2001 focussed on four major areas to support comprehensive review and improvement of conservation services:

- Improve tracking and reporting systems to support routine **monitoring** of conservation efforts, including quarterly reports on all rebate programs and annual reports on the entire conservation program.

- Design and implement comprehensive **residential conservation evaluation** for 2001, focussing on regional 'tracking' survey for resident awareness and behaviors; participant surveys for service satisfaction; and program data for quantifying fixture upgrades.
- Design and implement **commercial conservation evaluation** for 2001, incorporating field monitoring of sampled sites to revise saving estimates; regional business survey for awareness and barriers; and participant surveys for service satisfaction.
- Improve interactive capabilities for the **Conservation Potential Assessment** to allow more dynamic modeling by program managers of program costs, alternatives, and savings potential.

2001 ACCOMPLISHMENTS

SWP staff and consultants designed and implemented many new evaluation components in 2001 to build the comprehensive program review, including:

- New integrated database for all commercial audits and incentives.
- Quarterly reports for Wash Wise rebates. (New quarterly reports on commercial and multifamily incentive projects will begin in 2002.)
- Field monitoring of actual savings from 30 sampled commercial projects.
- Evaluation Plans for all 2001 residential and commercial programs.
- Regional survey of 1000 residential customers.
- Baseline and follow-up survey of 100 business customers.
- Separate participant surveys of customers involved in Wash Wise, Toilet Roundup, Soaker Hoses, Nurseries, Water Smart Technology, and Water Efficient Irrigation Programs.
- Interactive capabilities for the Conservation Potential Assessment (initiated but will not be completed until 2002).

LOOKING AHEAD

This Annual Report represents the first of three major evaluation reports to be released in 2002. The *Residential Conservation Evaluation* and *Commercial Conservation Evaluation* will provide comprehensive process and impact evaluations of 2001 programs, including more detailed water savings estimates, accelerated participation, program satisfaction, barriers to participation, and opportunities for delivery improvement.

SPU will also begin updating the *Conservation Potential Assessment* in 2002. This update will not be completed until 2004, but initial 2002 steps will include improvements to model interface, a draft and final update plan, and a public involvement plan. Public input will be conducted in 2003. The new Conservation Potential Assessment will revise estimates for savings potential and costs based on new research, technology improvements, survey and program data.

4. Consumption Analysis

Historical Data

To put the 2001 experience into context and better understand the Saving Water Partnership's program performance in 2001, a review of historical water use patterns is useful. The year 2001 produced the second "drought" response in the last 10 years, the first occurring in 1992. These two years exhibit peculiar water use patterns in that customers were asked to temporarily curtail their water use. In 1992, water use was severely restricted, and drought actions included a mandatory ban on lawn watering. In contrast during 2001, customers were only asked to voluntarily reduce their water use by 10%. Table 16 compares 2001 to previous years and the 1994-2000 average water use.

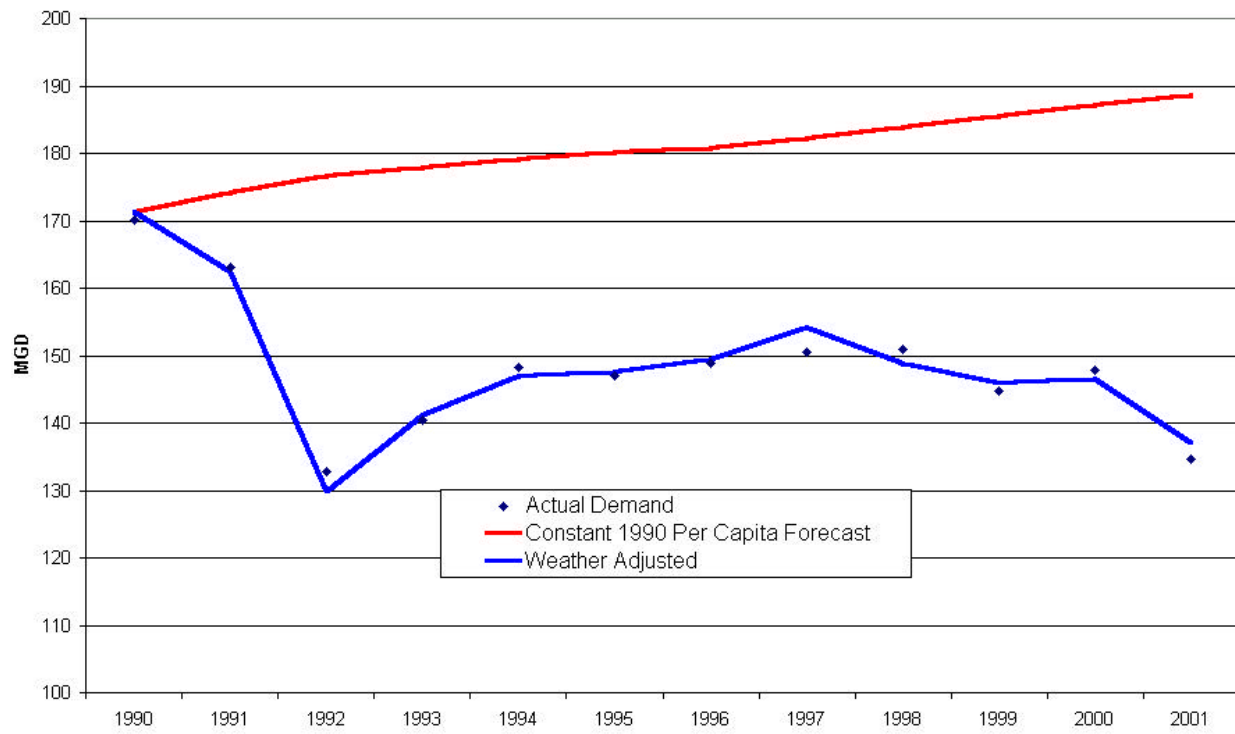
Table 16: Recent and Historical Demand

	2001	2000	'94-'00 Avg	1992
Average Annual Daily Demand - MGD	135	148	148	132
Average Summer Daily Demand - MGD	159	182	182	137
Average Winter Daily Demand - MGD	117	123	125	129
Annual Per Capita Daily Demand - GPD	103	114	117	108

While average annual use in 2001 was slightly higher than in 1992, use per person was lower than the more extreme drought of 1992. The following Charts illustrate how demand has changed historically.

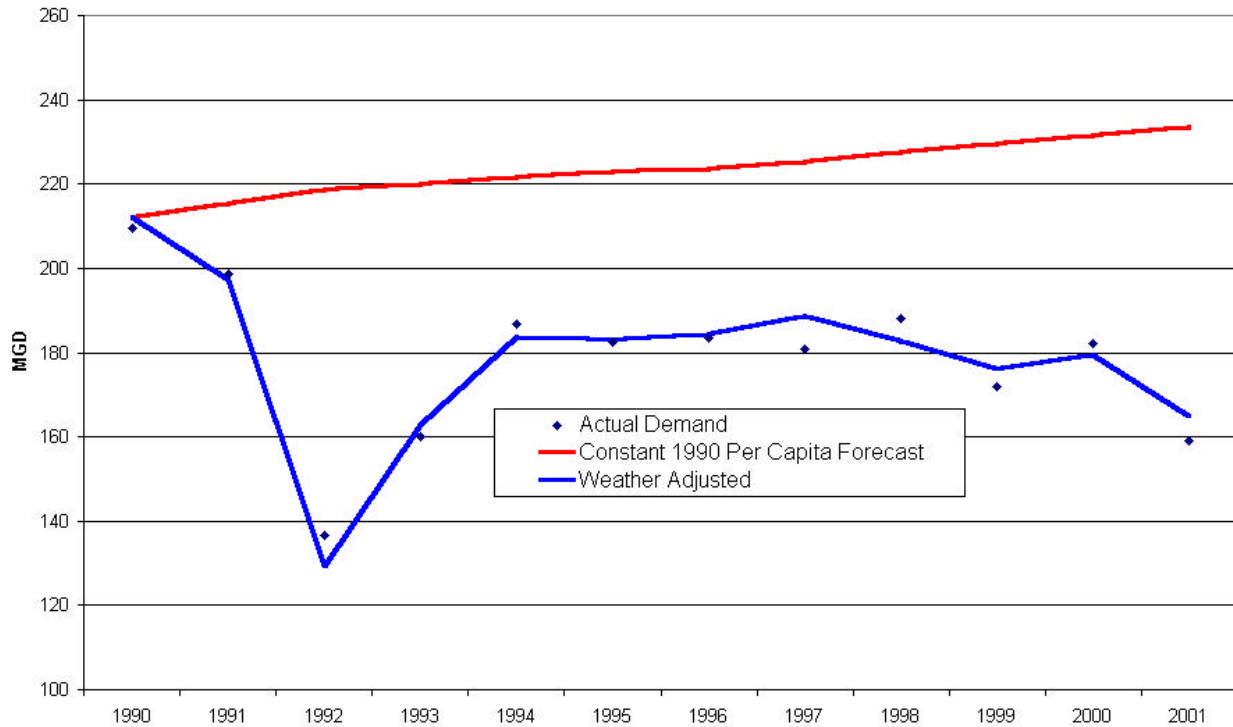
Two things to note in Chart 5,6 and 7: First, a demand "projection" using constant per capita use (equal to 1990 per capita use) -- the upper red line -- is compared to actual demand. Second, the weather's year-to-year effect on demand has been accounted for using a regression model to adjust actual demand to a level associated with "normal" weather. This model "normalizes" demand -- downward in a year that had a hot, dry summer, and upward when there was a cool, wet summer. For instance, because 2001 experienced a cool, wet summer, "weather-adjusted" demand in 2001 is somewhat higher than actual demand in 2001. The weather-adjusted demand is the solid black line.

Chart 5: Regional Annual Average Water Demand



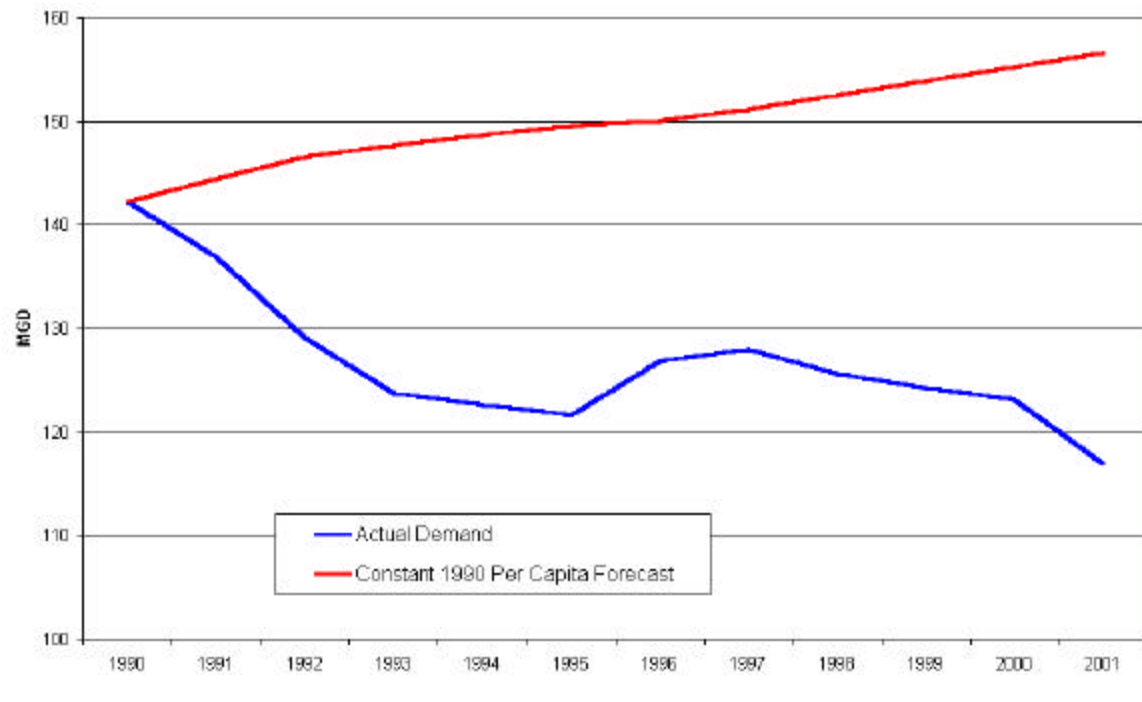
Average annual water use has departed steadily from constant per capita demand since the mid-1990's.

Chart 6: Regional Summer Water Demand



Summer water demand has fallen significantly from the 1990 level of about 210 MGD. The reduction in water use in 1992 was nearly to the level of early 1990's winter-time demands. After re-bounding in 1993 and 1994, summer demand has remained at about 180 MGD, until 2001. The reduction in 2001 was not as severe as 1992, falling from a lower initial level, and not falling to the low 1992 levels. Unlike 1992, customers continued to irrigate in 2001, albeit less than during a typical summer in the late 1990's.

Chart 7: Regional Winter Water Demand

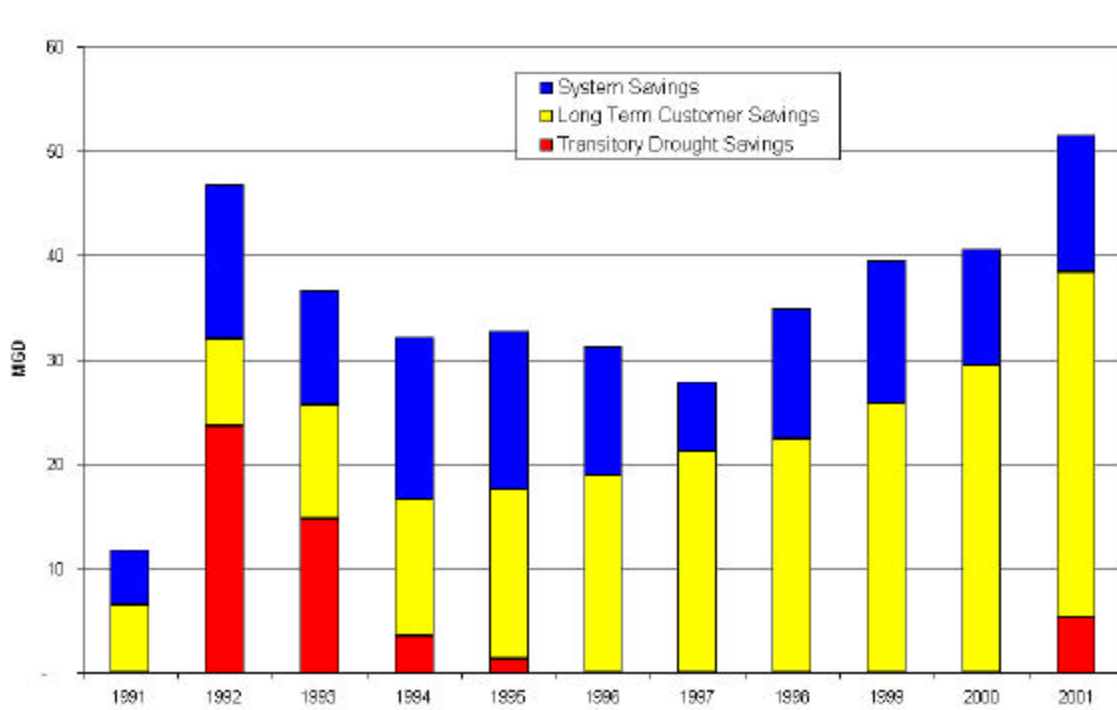


Winter demand has experienced a large departure from constant per capita use.

Conservation Savings

Chart 8 depicts the sources of historically achieved customer savings, defined as the difference between the constant per capita demand forecast and the weather adjusted actual demand in each year. Total savings in Chart 8 correspond to the growing difference between the red “constant per capita” line and the blue “weather adjusted actual” line in the average annual demand Chart 5,6 and 7 above.

Chart 8: Cumulative Annual Customer Savings since 1990



System savings (the top blue bar) are reductions in non-revenue water use. After the initial savings in 1991 and 1992, system savings have not increased over time, fluctuating from year to year, but averaging about 12 MGD. (In the coming years system savings should grow by another 3 MGD on average as in-town reservoirs are covered.)

On the other hand, long-term customer savings (the middle yellow bar) have grown steadily to more than 30 MGD in 2001.

The bottom red bar shows transitory savings from the 1992 and 2001 drought curtailments. The transitory drought curtailment savings diminished and finally disappeared after about four years. It is expected that the transitory curtailment savings from 2001 will gradually diminish over the next few years, in a fashion similar to 1992.

Table 17 shows estimates of the sources of savings in 2001, over and above the cumulative long-term savings achieved through 2000. The savings are for “weather adjusted” demands. The weather regression model estimates that actual demand in 2001 was about 3 MGD lower than normal weather demand, reflecting the cool wet 2001 summer.

Table 17: Estimates of Savings

	New Savings in 2001
Temporary Drought Curtailment	5 MGD
Above-normal Non-revenue Savings	1 MGD
New Long-term Customer Savings	4 MGD
Total New 2001 Savings	10 MGD

Again, based on the 1992 experience, the 5 MGD of short term drought curtailment savings will gradually diminish and the 1 MGD of above-normal non-revenue savings will not be sustained in 2002 and beyond.

Table 18 gives further detail on the sources of 2001 conservation savings.

Table 18: New Water Savings Achieved in 2001 (MGD)

	New Long Term Customer Savings					Short Term Savings			Total ³
	1% Conservation Program		Rates	Code	Total	Drought ² Curtailment	System	Total	
	Incentives	w/o Incentives							
Residential Indoor ¹	0.4	0.3	0.7	0.5	1.8	1.2	-	1.2	3.1
Residential Landscape	-	0.4	0.2	-	0.6	1.0	-	1.0	1.6
Commercial Domestic	0.0	0.3	0.1	0.3	0.6	0.9	-	0.9	1.5
Commercial Process	0.4	0.2	0.2	-	0.8	1.6	-	1.6	2.4
Commercial Landscape ¹	0.1	0.1	0.1	-	0.2	0.3	-	0.3	0.5
Total ⁴	0.8	1.2	1.2	0.8	4.0	5.0	1.0	6.0	10.0
¹ Includes Multi-family ² Includes impact of temporarily depressed business/economic conditions in 2001. ³ Savings are weather-adjusted from 2001 forecast and do not include additional 3 MGD from 2001 weather impacts. ⁴ Some totals may not add due to rounding.									

Long term savings include savings that would come from higher water rates and plumbing fixture codes, without the 1% Program. The other sources of long term savings includes both the direct and indirect impacts from incentives, education and promotion of the 1% Program – these savings are the focus of this report’s other sections.

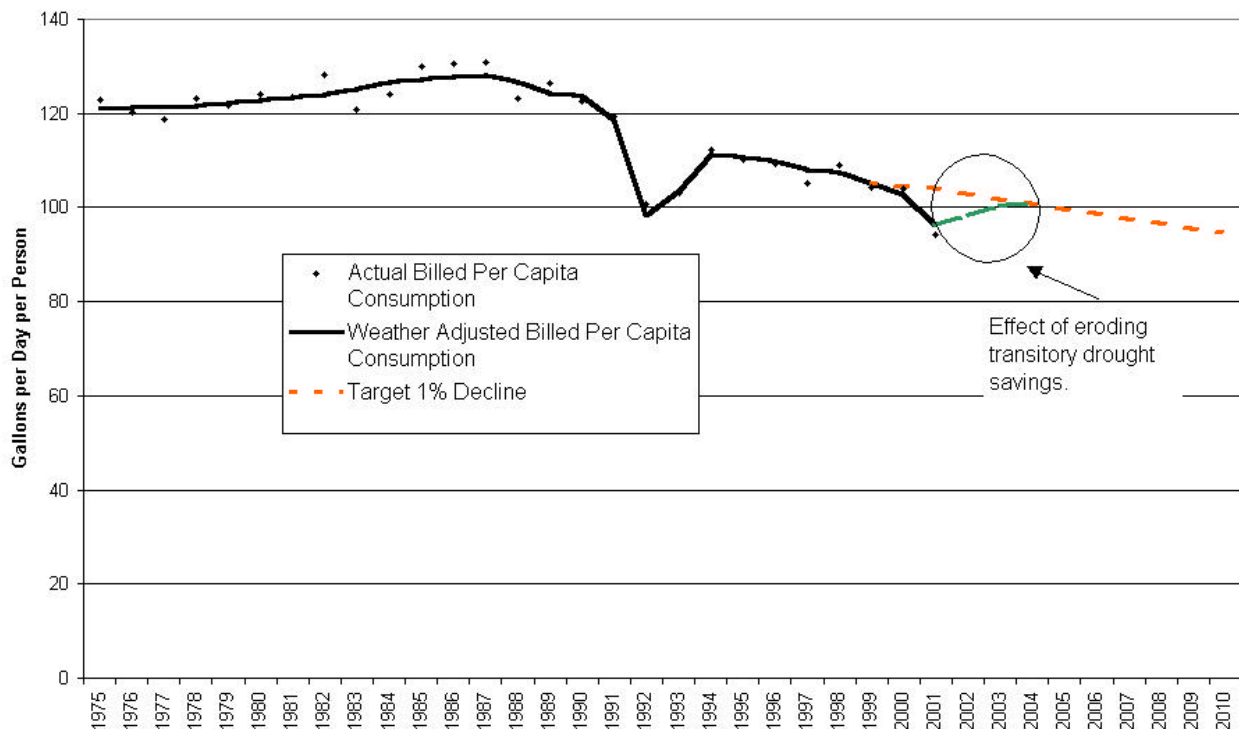
Short term savings come from above-normal system (non-revenue) savings and from temporary drought curtailment actions, as well as 2001’s temporary slowing of business/economic activity in the regional service area.

The savings breakout in Table 18 were estimated as follows: Rates – price elasticity parameters from SPU econometric model forecast; Code – natural replacement of plumbing fixtures as forecast in SPU Conservation Potential Assessment model; 1% Program Incentives

– see individual program estimates from Section 3 of this report; System – analysis of 2001 system use; Drought Curtailment – analysis of 1992 post-drought experience; 1% Program without Incentives – residual savings derived from all other savings. Savings for individual program areas were estimated from analysis of seasonal billing data by sector.

Chart 9 shows per capita use back to 1975, illustrating that until the late 1980's, per capita use was on the rise. Since then, with increased emphasis on conservation, per capita use has been steadily decreasing. As in 1992, the year 2001 saw a dramatic (though not of 1992 magnitude) one-year decline in water use. However, as again was the case in 1992, a good part of those savings are short term transitory reductions in use which will erode over a few years' time. The estimate of the future of those transitory savings is shown on Chart 9 (green dotted line in circle). The 1% Program target for per capita consumption is shown as the red dotted line. As the chart shows, the 2001 per capita consumption is well below the 2001 Target for the 1% Program.

Chart 9: Regional Billed Per Capita Consumption



The 2001 drought savings from a long-term conservation perspective may be viewed as achieving some of the behavioral savings that were to be gradually obtained over the next ten years ahead of schedule. Continuation of long-term behavior programs will convert those transitory savings to long-term customer savings. In addition, investments in long-lived hardware, fixture and technology programs can continue to be emphasized in order to proceed toward the 1% Program long-term water use goals.

5. Rebated Equipment by Water Provider

Tables 19 to 23 summarize incentives provided to customers in the SWP service area listed by utility partner.

Table 19: Wash Wise Rebates

<i>Utility</i>	2000	2001	% Increase from 2000 to 2001	Program total through 2001
Bryn Mawr-Lakeridge	21	35	67%	124
Cedar River	74	139	88%	336
City of Bellevue	526	800	52%	2,252
City of Bothell	92	82	-11%	261
City of Duvall	26	51	96%	116
City of Edmonds	63	114	81%	346
City of Kirkland	250	317	27%	888
City of Mercer Island	111	162	46%	505
City of Redmond	227	613	170%	1,212
City of Tukwila	24	19	-21%	65
Coal Creek	88	117	33%	362
Highline	164	186	13%	616
K.C. #20	45	51	13%	210
K.C. #45	9	5	-44%	21
K.C. #49	30	51	70%	154
K.C. #85	11	8	-27%	33
K.C. #90	57	93	63%	271
K.C. #119	27	15	-44%	72
K.C. #125	24	24	0%	96
Lake Forest Park	8	26	225%	49
Northshore	252	344	37%	1,025
Olympic View	29	54	86%	149
Shoreline	189	175	-7%	604
Soos Creek	226	236	4%	826
SPU	3,687	4,229	15%	13,600
Woodinville	233	328	41%	978
Totals: all utilities	6,493	8,274	27%	25,171

Table 20: Toilet Round Up

<i>Utility</i>	<i>% of</i>	<i>Two-event</i>		
	<i>Total</i>	<i>Total # of Toilets</i>	<i>July 14th Event</i>	<i>August 18th Event</i>
Bryn Mawr-Lakeridge	0.2%	10	3	7
Cedar River	1.2%	57	5	52
City of Bellevue	15.1%	695	60	635
City of Bothell	1.2%	54	5	49
City of Duvall	0.0%	1	-	1
City of Edmonds	0.6%	28	14	14
City of Kirkland	4.4%	202	26	176
City of Mercer Island	2.5%	116	17	99
City of Redmond	4.5%	208	15	193
City of Tukwila	0.4%	19	7	12
Coal Creek	1.2%	57	2	55
Highline	2.5%	116	35	81
K.C. #20	0.8%	35	18	17
K.C. #45	0.1%	4	2	2
K.C. #49	0.4%	20	12	8
K.C. #85	0.1%	5	2	3
K.C. #90	1.1%	51	8	43
K.C. #119	0.2%	7	1	6
K.C. #125	0.2%	9	1	8
Lake Forest Park	0.3%	13	3	10
Northshore	3.3%	154	13	141
Olympic View	0.5%	25	3	22
Shoreline	2.7%	125	42	83
Soos Creek	6.0%	275	43	232
SPU	45.1%	2,077	770	1,307
Woodinville	3.0%	139	10	129
Outside of service territory	2.2%	100	30	70
Totals: all utilities	100%	4,602	1,147	3,455

Note: Approximately 290 additional toilets have been rebated from customers who didn't bring receipts to the event, or who chose not to wait in line at the second event, and from elderly/disabled customers. Sixty dual-flush toilets were rebated, and are included in the above totals.

Table 21: Soaker Hoses Sold at Nurseries

NURSERIES	LOCATION	HOSES SOLD	CLASSES
5 Corners Nursery and Gifts	Burien	232	06-May-2001
Alpine Nursery	Renton	60	20-May-2001
Classic Nursery and Landscape Company	Redmond	134	13-May-2001
Cottage Creek Nursery	Woodinville	130	26-Apr-2001
Des Moines Way Nursery	Des Moines	36	
Furney's Nursery	Des Moines	1111	10-May-2001
Gray Barn Garden Center	Redmond	73	
Gray Barn Garden Center - Bella Location	Redmond	42	
Hayes Nursery	Issaquah	126	03-May-2001
Magnolia Garden Center	Seattle	230	
Molbak's – University Village	Seattle		See Molbak's Woodinville
Molbak's - Woodinville	Woodinville	598	27-May-2001
Olympic Nursery	Woodinville	407	12-May-2001
Seattle Garden Center	Seattle		See Molbak's Woodinville
Swansons Nursery	Seattle	688	
West Seattle Nursery	Seattle	198	
TOTAL		4065	

Note: Thirty-five nurseries throughout the regional service area were invited to participate. Most nurseries serve multiple districts and cities. Four nurseries were located in South King County, seven nurseries were located in East and Northeast King County and five nurseries were in Seattle.

Table 22: Water Smart Technology Incentives

Utility	Customer	Type of Project	GPD
Bryn Mawr-Lakeridge	Skyway Park Bowl	Ice machine	1,176
City of Bellevue	110 Atrium Building	Toilets	1,710
City of Bellevue	Meydenbauer Center	Ice machine	2,832
City of Bellevue	Meydenbauer Center	Single pass refrigeration	3,029
City of Bellevue	Tuan Nguyen Family Dentistry	Dental vacuum	150
City of Duvall	Town Center Mini-Mart Texaco	Ice machine	1,618
City of Kirkland	Lake Wash. SD-Peter Kirk Elem	Urinals	1,915
City of Kirkland	Lake Wash. SD-Bell Elem	Urinals	1,914
City of Redmond	Lake Wash. SD-Norman Rockwell	Urinals	1,914
City of Redmond	Lake Wash. SD-Horace Mann	Urinals	1,914
City of Tukwila	Aero Go	Toilets	63
Highline	Judson Park Retirement	Toilets	1,364
Highline	Normandy Park City Hall	Urinals	1,500
Highline	Judson Park Retirement	H-axis clothes washers	216
KC WD #125	Missing Sock Laundromat	H-axis coin-op machines	576
Northshore	Inglewood Golf Club	Ice machine	2,568
Northshore	Lake Wash. SD-Keller Elem	Urinals	1,914
Northshore	Lake Wash. SD-Finn Hill Jr H.	Urinals	1,914
SPU	UW - Hitchcock Cooling Tower	Cooling tower control	172,800
SPU	Executive Pacific Plaza Hotel	Toilets	2,844
SPU	1001 Fourth Avenue Plaza	Toilets	1,440
SPU	Sheraton Seattle Hotel	Exhaust-air system	25,920
SPU	1001 Fourth Avenue Plaza	Water pump	10,605
SPU	Todd Pacific Shipyards	Salt water pumping	51,233
SPU	The Hearthstone	New Dishwasher	1,287
SPU	GM Nameplate	Photoprocessor water rinse recycling	1,480
SPU	Northgate Inns dba Ramada Inn	Ozone Laundry System	1,623
SPU	Renaissance Madison	Ozone Laundry System	5,144
SPU	LaFarge Corporation	Industrial water reuse	17,014
SPU	The Space Needle Corporation	Ice machine	1,300
SPU	New Star Seafood Restaurant	Ice machine	400
SPU	The Space Needle Corporation	Single pass refrigeration	306
SPU	Aurora Burgermaster	Ice machine	531
SPU	Bay Café	Ice machine	531
SPU	U of W Student Union Building	Refrigeration	12,343
SPU	The Edgewater Hotel	Ice machine	1,380
SPU	Silver Cloud Inn - University	Ice machine	650
SPU	China Jade Restaurant	Ice machine	432
SPU	John's Corner Deli	Ice Machine	535
SPU	Wild Salmon Seafood Market	Ice machine	1,325
SPU	Kid Valley Restaurant	Single pass refrigeration	986

Utility	Customer	Type of Project	GPD
SPU	China Jade Restaurant	Single pass refrigeration	250
SPU	Chinooks at Salmon Bay	Single pass refrigeration	3,000
SPU	ABC General Dentistry	Dental vacuum pump	411
SPU	McKenny Dental Offices	Dental vacuum pump	740
SPU	U of W Student Union Building	Single pass AC	9,257
SPU	Baker's Restaurant	Single pass AC	2,323
SPU	UW - Tubby Graves Building	Single pass AC	4,083
SPU	UW - Johnson Hall	Water-cooled electron microscope	1,440
SPU	U of W Medical Center	Medical air	6,048
SPU	Standard Steel	Single pass air compressor	1,600
SPU	Mayflower Park Hotel	Toilets	2,950
SPU	Seattle Gymnastics Academy	Toilets	200
SPU	Alki Masonic Temple	Toilets	240
SPU	Atlantic Street Condos	Toilets	1,000
SPU	St. Germain Foundation	Toilets	28
SPU	Nyconco Development Corp.	Toilets	615
SPU	Nordstrom Federal Credit Union	Toilets	126
SPU	Aloha Inn	Toilets	636
SPU	St. Peters Episcopal Church	Toilets	141
SPU	Northwest Hospital	Toilets	1,112
SPU	Best Western Executive Inn	Toilets	696
SPU	McKinstry Company	Urinals	137
SPU	Grady's Grillhouse	Urinals	150
SPU	1001 Fourth Avenue Plaza	Urinals	360
SPU	Seattle Center - Center House	Waterless urinals	850
SPU	Seattle University	Urinals	200
SPU	Fremont Avenue Laundromat	H-axis coin-op machines	1,296
SPU	Seattle's Nicest Coin Laundry	H-axis coin-op machines	1,152
SPU	Westwood Maytag Laundry	H-axis coin-op machines	2,304
TOTAL			383,741

Table 23: Water Efficient Irrigation Incentives

Utility	Customer	Sites	Schedule & weather control	System performance	Install Rain Sensor	GPD
City of Bothell	The Seattle Times	1	Yes	Yes	Yes	2,933
Northshore	Songwood Condominiums	1			Yes	1,402
SPU	Seattle Parks Department	43	Yes	Yes		87,203
SPU	Hawthorne Square	1	Yes	Yes		633
SPU	King County Intern'l Airport	1			Yes	620
SPU	Metro North Base Facility	1			Yes	836
SPU	University Washington	5	Yes	Yes		3983
TOTAL		53				97,610

Table 24: Water Efficient Irrigation Audits

Utility	Name of Business/Company	Audited Sites
City of Bellevue	Equity Office Properties	2
City of Bellevue	Park Plaza Apartments	1
City of Bothell	Schnitzer NW	1
City of Bothell	University of Washington Bothell	1
City of Kirkland	City of Kirkland Parks	2
City of Redmond	Teijin Seiki America	1
Highline Water District	Furney's Nursery, Inc.	1
Highline Water District	Royal Skies	1
Northshore Utility District	Evergreen Medical Center	1
Northshore Utility District	Songwood Condominiums	1
SPU	Bank of America Building	1
SPU	Forest Lawn Cemetery	1
SPU	Fred Hutchinson	1
SPU	Hawthorn Square	1
SPU	Housing Resources Group	1
SPU	Lorig Management	1
SPU	North Seattle Community College	1
SPU	NW Fisheries Science Center	1
SPU	Port of Seattle	1
SPU	SeaTac	1
SPU	Seattle Housing Authority	4
SPU	Seattle School District	1
SPU	Washington DOT	1
SPU	Wright Runstad, Amazon	1
Soos Creek Water & Sewer District	Thorsett Nursery	1
Woodinville Water District	City of Woodinville Parks	2
Total		32

Select Commercial Project Descriptions

1001 Fourth Avenue Plaza Building (Water Pumps)

Seattle Public Utilities

The 1% Program provided a financial incentive of 21% of the total project costs. The project involved replacing two existing domestic water pumps, 100 and 40 hp in size, with two 25 hp pumps with an alternating variable speed drive and 132 gallon pressure tank. The previous lead pump trips out during low demand because of excessive heat buildup on the pumping system header. This problem had been avoided with a constant bleed that cannot be regulated to anything less than 5 GPM. This had been the standard operating practice on nights and weekends. With the new system, the variable speed will reduce the pump operation to match load requirements leading to significant water and energy savings. Constant bleed will no longer be required.

Randall Dahl of SPU sampled water use over a weekend and weekday overnight period, by making a series of before and after hours meter readings. Project verification will consist of a second set of meter readings after the project is complete.

Baker's Restaurant (Air Condensers)

Seattle Public Utilities

The 1% Program provided a financial incentive of 50% of the total project costs. This project involved the removal of two existing water-cooled condensers and installation of two exterior air-cooled condensers. The two previous units served a walk-in cooler for the restaurant and an air conditioner providing cooling to a basement chocolate factory. The basement space temperature can not exceed a certain setpoint in order to maintain chocolate quality.

It is not uncommon for a small restaurant business to have water-cooled equipment responsible for a majority of total water use. Savings in this case were estimated by field measurement (bag and timer) of the constant water flow of each condenser. Hours of operation were then estimated for each unit based on typical use for this type of equipment. The results indicate savings of almost 65% of the total water use by this customer.

Birmingham Steel (Cooling Tower, Process Water, Air Condensers)

Seattle Public Utilities

The 1% Program provided a financial incentive of 50% of the total costs to complete two projects and 47% of the total costs for a project yet to be completed. The Birmingham Steel Mill facility is one of the largest retail users of Seattle Public Utilities water. Several processes and specific plant equipment use detail, nearly continuous volumes of water. For several years, a reconditioned on-site well has supplied up to 30% of all non-potable water needs at the plant. Another characteristic of the site is that no industrial water discharge is permitted unless collected and treated. This includes runoff and process water. Only domestic water uses actually end up in the sanitary sewer system.

The project completed in 2002 was the second Participation Agreement with Birmingham Steel. The original agreement covered three projects. Two were completed in prior years under the original agreement. The descriptions of all three projects are included below.

The first project item was a cooling tower for the high temperature baghouse fans. Motor bearings were currently cooled with once through water that flowed to the storm drain and treatment system. This water was then treated along with water from other sources and discharged to Elliott Bay. A cooling tower was installed in order to allow water to circulate in a cooling loop. The only water use will be makeup for evaporation and blowdown.

The second project item was completion of a water treatment and recycling system. As already described, some water was currently treated prior to discharge into Elliott Bay. This is an NPDES permit requirement. The recycling system will collect process non-contact cooling water, storm water, and ground water infiltration. A treatment and control system would process and return the water to selected processes that currently use a combination of well water and city water. The result of this project would vastly decrease the amount of treated industrial water discharged to Elliott Bay, stretch the well water supply, and reduce city water use. The third project is an air compressor system.

City of Seattle Parks (Irrigation)

Seattle Public Utilities

The 1% Program provided a financial incentive of 33% of the total project costs. Seattle Parks and Recreation connected 43 parks to one of three central control systems located in the South, Central and North areas of Seattle. Connecting each park to a computerized central control system will increase water use efficiency in the landscape. The system has many special features for maintaining landscapes, including the ability to manage more than one site and adjusts irrigation timing according to daily weather readings collected from weather stations. Also, since rain sensors are a component of the weather station the system will not irrigate when it rains. Another important component of the computerized system is its ability to detect leaks. The system will close valves and sound system alarms when leaks are detected. An added benefit of this function, other than water conservation, is an increase in repair response time and a decrease in staff time spent locating the leak. Average annual water savings from all 43 parks are expected to be 87,000 GPD.

Japanese Garden (Water Recirculation)

Seattle Public Utilities

The 1% Program provided a financial incentive of 50% of the total project costs.

The Japanese Garden has existed in Washington Park Arboretum for 40 years. A main feature of the garden is a 21,000 square foot lake/koi pond with a waterfall feature that introduced potable water delivered by SPU into the lake. Water flow at the start of the waterfall is 50 GPM. Some of the delivered water was lost due to leakage through the pond bottom and evaporation, and this has been estimated at approximately 5 GPM at the highest rate. The majority of the 50 GPM delivered were lost at the Northeast lake end where the water discharged into a collection sump. The sump overflow proceeded into a storm drain that crosses Lake Washington Blvd. and discharges into a natural storm drainage swale.

The new re-circulation system will collect, filter, ozonate, and return the treated water back to the head of the main waterfall. The water meter that serves the Japanese Garden was previously observed recording water supply flow to the garden at more than 50 GPM, consistent with the previous operation parameters of the water feature. Water consumption for the previous year averaged 30,000 GPD, and peaked at more than 56,000 GPD. The system is turned completely off 4 months of the year and 12 hours each night during the eight months of operation. Estimated savings with the re-circulation system are 5 million gallons annually.

Lafarge Corporation (Wastewater Reuse)

Seattle Public Utilities

The 1% Program provided a financial incentive of 25% of the total project costs.

The Lafarge Corporation Seattle Plant manufactures cement utilizing a wet process. Overall the plant consumes about 80 million gallons of water per year. In the last two years the plant has developed a stormwater collection system that collects and utilizes in the manufacturing process all rainwater that falls on the site. This system provides an average of 20 million gallons per year of the 80 million total. The remaining 60 million is potable water provided by SPU, although the plant is trending down from an average of 180,000 GPD over two years ago to 145,000 GPD the most recent average. It is not known if all of this reduction can be attributable to the storm water system.

The 2002 project involved a second system to replace a larger percentage of potable water use by installing a wastewater recycling system. The proposal is for wastewater to be brought to the plant by truck or barge, approximately three to four deliveries per day/seven days a week. The trucks would discharge into the east wash mill-plc controlled to transfer this wastewater to a 631,500 gallon capacity tank. This tank would feed the raw mill with wastewater at a rate of between 20 and 200 GPM. The system would utilize in the range of 6 to 15 million gallons in the first year, but would be sized to replace 100% of existing water use with wastewater.

Madison Renaissance Hotel (Ozone Laundry System)

Seattle Public Utilities

The 1% Program provided a financial incentive of 26% of the total project costs.

The Madison Renaissance Hotel is an existing downtown Seattle hotel. This is one of the few hotels in downtown Seattle having electrically heated hot water for the laundry, making the choice of an ozone laundry system especially cost-effective due to the additional rebate that can be provided by Seattle City Light for electrical savings. Hot water use will be greatly reduced through the addition of an ozone system. This direct inject system is the fourth installed in an area hotel. Both SPU and Seattle City Light will closely monitor the project, as this will be the second ozone system that has qualified for a city light rebate.

Expected performance will be in the two gallon per pound range. Optimal savings do not occur immediately, but normally reach peak expectations after 30 days of fine tuning formulas, fill levels, and water temperature. The full incentive payment will be authorized for payment after SPU staff completes a system inspection.

Meydenbauer Center (Air-cooled Condensers)

City of Bellevue

The 1% Program provided a financial incentive of 50% of the total project costs.

This project involved the installation of a roof top air-cooled condenser that is linked to three existing water-cooled condensers serving two walk-in coolers and one walk-in refrigerator. A fourth circuit was run to an existing 600 pound ice machine. This project eliminated all water-cooled condensers in Meydenbauer Center.

Savings were estimated by the installer utilizing a computer program that accounts for the parameters of condenser and evaporator temperature, compressor capacity, inlet water temperature and average daily run time. Estimated savings were further reducing those results by 20% to account for possible run times of fewer than 18 hours per day.

Pike Place Fish (Air-cooled Ice Machine)

Seattle Public Utilities

The 1% Program provided a financial incentive of 50% of the total project costs.

Pike Place Fish, a renowned fish market centrally located in the historic Pike Street Market has operated with a water-cooled ice maker providing ice for product display for many years. Ice was produced and collected on the floor of the ice making room. Annual water use for this business was in the three million gallon range. Nearly all of this water was for making ice, with a small portion for clean-up. The new air-cooled ice maker will reduce annual water use by an estimated 80%, or 6,531 GPD. Water and sewer cost savings will be just under \$20,000 per year providing the customer with less than a two year payback. It will also improve the production, supply and storage of ice as an ice storage bin was part of the installation. With ice supply requirements that peak in the summer, this proposed project provides excellent peak season water savings.

Seattle Times (Irrigation)

City of Bothell

The 1% Program provided a financial incentive of 50% of the total project costs.

The Seattle Times North Creek Facility is approximately 14 acres of turfgrass and ornamental beds in an estimated 70%/30% configuration respectively. The 2002 project represented a significant upgrade to the existing timeclock, a labor intensive system that had historically over watered due to lack of control flexibility to apply water precisely matching the daily needs of the landscape. In addition to water savings, benefits included increased plant health, lower maintenance, superior real time information including flow metering and leak alarms, and longevity of the existing landscape. With the value in an existing established landscape, it was completely prudent to invest in a reliable, efficient irrigation system.

Average annual water savings have been estimated at about 2,933 GPD (or peak savings of 6,000 GPD) compared to existing irrigation practices and historical water use records over the past five years. The result of the project will be increased irrigation efficiency, ability to water based on an irrigation schedule specific to landscape needs, system monitoring and diagnostics, and less water wasted in the landscape.

Standard Steel (Air Compressor)

Seattle Public Utilities

The 1% Program provided a financial incentive of 12.2% of the total project costs.

This project involved replacing an industrial water-cooled air compressor with an air-cooled unit. As with similar air compressor replacement projects, there are significant electrical energy savings resulting as well. Seattle City Light performed energy performance analysis and also provided an appropriate financial incentive. The customer has estimated 90% or more goes to this unit. Using water billing records, we estimate that water use will be reduced by a conservative 80% at this facility. Current monthly average is 60,806 gallons. Savings of 80% will reduce the monthly consumption by 48,000 gallons.

Union Bank of California Building (Water Pumps)

Seattle Public Utilities

The 1% Program provided a financial incentive of 23.4% of the total project costs.

The proposed project involves replacing two existing domestic water pumps, 100 and 40 hp in size, with two 25-hp pumps including variable speed drive. During low demand the previous lead pump would trip out because of excessive heat buildup on the pumping system header. Building operators has avoided this problem with a bleed valve connected to a temperature sensor that opens a “once through” flow of cooling water when a specific temperature setpoint is reached. The flow proceeded until temperature had been reduced to the shutoff setpoint. According to project meter reads, the pumps dumped about 4,267 GPD. The meter readings also validated the assumption that most of the water flows were on the weekend during periods of low demand. With the new system, the variable speed will reduce the pump operation to match load requirements eliminating the need for cooling water.

University of Washington Medical Center (Sterilizers and Air Compressors)

Seattle Public Utilities

The 1% Program provided a financial incentive of 41.9% of the total project costs.

The Medical Center completed two major projects in 2002, a sterilizer retrofit and air compressor installation. The sterilizer project was a proven retrofit adaptation provided and installed by the sterilizer manufacturer. This measure had been completed with great success at both Providence Hospital and Fred Hutchinson Cancer Research Center.

The air compressor was initially overlooked because of the projected high capital cost, and that the existing liquid ring equipment was only five years old. After medical center staff took a closer look, a new quadraplex oil-less system would not eliminate considerable water consumption, but would be much more energy efficient by allowing for the capability to match hospital loads at a much closer level. The previous 40 hp unit operated very inefficiently at partial loads, which are in effect the majority of the time. By installing four 10 hp units which can be brought online as needed, the operating efficiencies will reduce the electrical use by well over 100,000 kWh per year. Combining the electrical and water and sewer savings, the UWMC will realize a simple payback of one to two years. Total water savings from the two projects are expected to be over 21,000 GPD for a savings of \$60,000 annually.

University of Washington (Irrigation)

Seattle Public Utilities

The 1% Program provided a financial incentive of 50% of the total project costs.

This project included five sites throughout the Seattle campus. Each project consisted of hooking up controllers to a central irrigation controller that adjusts irrigation scheduling by evapotranspiration readings taken daily. Metering at the UW is done with the assistance of flow sensors. Flow sensors on the irrigation systems serve two purposes. First, they allow the UW to get a reduction on sewer. Second, and most importantly, they detect leaks and broken heads and automatically and immediately shut down the particular irrigation system. Average annual water savings from the five sites are expected to more than 4,500 GPD, with peak season savings near 14,000 GPD.

University of Washington Student Union Building (Cooling Tower)

Seattle Public Utilities

The 1% Program provided a financial incentive of 37.5% of the total project costs.

The Student Union Building, built in phases over the years 1949 through 1960, was not equipped with air conditioning when the bowling alley was added. A 15-ton single pass unit was later installed in a mechanical room/shop area of the bowling alley as an expedient way to

provide comfort to bowlers. This building also provides a large food service function and contains multiple medium and low temperature refrigerated cases and walk-ins. The refrigerated spaces are served by a double compressor rack totaling 20 tons of refrigeration in a grocery store-like configuration. These compressors dumped heat into a cooling loop served by a cooling tower. Several years ago the cooling tower failed and has not been replaced. Subsequently, instead of evaporation from the cooling tower dissipating heat, single pass water was in constant use.

The 2002 project replaced the existing cooling tower with a higher capacity unit capable of handling the compressor racks and the single pass AC unit in the bowling alley. A prior site inspection revealed flows in excess of 15 GPM. This took place on a mild, but late fall day and use was expected to increase during peak season as cooling loads increase. Savings of 20,000 GPD on average are expected.